

TRIP REPORT SEVEN POINTS LOOP EFRD SITE – INFILTRATION TESTING

1.0 PURPOSE

This Trip Report presents the field data and results of double-ring soil infiltration tests conducted to support the design of a stormwater management system at the Seven Points Loop EFRD site located in Penn Township, Huntingdon County, Pennsylvania, as part of the Pennsylvania Pipeline Project (PPP) for Sunoco Pipeline, LP. One deep and two shallow tests (IT-A and IT-B) were performed at the site. The test locations are listed by coordinates (latitude and longitude) in Table 1 and shown on the attached figure. A deep infiltration test was proposed for the IT-A location but was not conducted due access issues.

2.0 FIELD ACTIVITIES

The infiltration tests were conducted by Keith Simpson and Jake Marlow of Tetra Tech, Inc., on September 28, 2016 and October 04, 2016. The test locations were positioned in the field using a handheld, WAAS-enabled GPS unit. Table 1 provides the coordinates of the test locations. Both testing areas were located adjacent to an existing utility corridor.

The infiltration tests were performed in accordance with the procedure specified in the 2006 Pennsylvania Stormwater Best Management Practices (BMP) Manual. The test locations were prepared with hand tools and a mini-excavator, and care was taken to minimize disturbance of the soil surface to be tested. Double-ring infiltrometers were used for testing and consisted of 10-inch diameter and 6-inch diameter sections of steel casing, each 10 inches in height. After digging to the target depth, the test surface was leveled, and loose soil and debris were removed. The rings were driven a minimum of 2 inches into the soil. The infiltration test depths are presented in Table 1.

Test locations were pre-soaked for 1 hour. The tests were then conducted with measurements at 10-minute or 30-minute intervals, based on the observed water level drops during the last half of the pre-soak period. Pre-soak and test information was recorded on infiltration test data sheets; copies of the test data sheets are attached to this report.

During the testing, the weather was sunny, approximately 65 degrees Fahrenheit, and no precipitation was observed during the time of testing. Additionally, less than 0.5 inches of precipitation was observed 24 hours prior to testing.

Test pits were excavated near each testing location to characterize the soil, determine the depth to bedrock, if encountered, and inspect for evidence of the seasonal high water table. The test pits were identified with the corresponding infiltration test name. The test pits were machine-excavated to 2 feet below the target infiltration test depth or refusal, whichever was encountered first. Descriptions of the soil were recorded on field logs, which were based on the form example in the BMP manual. Copies of the field soil logs are attached to this report.

3.0 RESULTS

3.1 Soil Description

Soils encountered generally consisted of a thin (up to approximately 2 inches) dark brown (7.5YR 3/2) loam topsoil/surface layer with many fine roots. This topsoil/surface layer was underlain by an alluvial layer which consisted of a reddish brown (2.5YR 4/4, 5/3) silty clay with trace fine roots and few gravel-sized rock fragments. A saprolite layer was found in test unit IT-B from 24-62 inches below ground surface and consisted of a dark yellowish brown (10YR 4/4) silty clay which trended to highly weathered sandstone with depth. Competent bedrock was not encountered.

Seasonal high water was not observed at the testing locations, nor was any mottling observed.

According to United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey data, the soil type for the test locations is mapped as follows:

- Calvin Shaly Silt Loam - (CaC soil symbol) with 8-15 percent slopes; with low runoff and is well drained.

3.2 Infiltration Tests Results

Table 1 summarizes the infiltration rates (inches per hour) calculated from the test data. Infiltration rates presented in Table 1 were calculated from the average water level drop of the last four stabilized readings measured in the inner ring.

The pre-soak test results for IT-B (shallow) indicated a high infiltration rate, requiring a 10 minute test cycle; whereas, the presoak test results for IT-A (surface) and IT-B (deep) indicated low infiltration rates, requiring 30 minute test cycles.

Table 1
Summary of Infiltration Test Results
Seven Points Loop ERFD
Penn Township, Huntingdon County, PA
Sunoco PPP

Test Location (IT-)	Location Data		Test Depth (inches)	Infiltration Test Result (inches/hour)
	LATITUDE	LONGITUDE		
IT-A (shallow)	40.37454°	- 078.07770°	2	0.63
IT-B (shallow)	40.37463°	- 078.07754°	2	3.75
IT-B (deep)			36	0.13

Figure 1

Infiltration Testing Locations
Seven Points Loop EFRD
Soil Type: Calvin Shaly Silt Loam (CaC)
Huntington County, PA

Legend
📌 Infiltration Tests



ATTACHMENTS

SOIL LOGS



Soil Log

Tested By: Jake Marlow

Project: Sungco-PPP

Project No.: 112IC05958

Test Pit: Seven Points Loop EFRD IT-A Date: 10/4/16

Elevation: _____

Equipment Used Hand Auger

Geology: Catskill Formation Soil Type: Calvin shaly silt loam (CAC)

Land Use: _____

Weather: 50° Cloudy

Additional Comments

Hand Auger to 25"

Horizon	Upper Boundary	Lower Boundary	Soil Textural Class	Type, Size, Coarse Fragments, etc.	Soil Color	Color Patterns	Pores, Roots, Rock Structure	Depth to Bedrock	Depth to Water	Comments
O/A	0"	1"	Loum	Fine sand and silt Trace clay vegetation	7.5YR 3/2	Solid	Pores, Roots	-	-	Thin layer organic to top soil Dry
B	1"	25"	Silty Clay loam	Clay w/ silt and trace fine sand	2.5YR 4/4	Solid	Pores, 1/4" to 1/2" Rocks	-	-	Dry

Debris

Horizon:	USDA Definition	Soil Textural Class	Boundary	Notes:
O	Organic debris	Use ternary diagram from US Department of Agriculture Soil Conservation Service	Use depth and classification	- Did Not Encounter High Seasonal Groundwater - No Refusal - <0.5" of Rain in past 24 hours
A	Dark colored, mixed mineral organic matter		Classification as Follows:	
B	Maximum accumulation of silicate clay minerals		Abrupt	
C	Weathered parent material		Clear	
R	Layer of consolidated rock beneath the soil		Gradual	
			Diffuse	



Soil Log

Tested By: Jake Marlow

Project: Sunoco - PPD

Project No.: 112IC0598

Test Pit: Seven Points Loop EFRD-IT-B Date: 9/28/16

Elevation: _____

Equipment Used Mini Excavator

Geology: Catskill Formation Soil Type: Calvin Shaly Silt Loam

Land Use: _____

Weather: 60s/Clear

Additional Comments

Mini Excavator to 50", Hand Auger to 62"

Horizon	Upper Boundary	Lower Boundary	Soil Textural Class	Type, Size, Coarse Fragments, etc.	Soil Color	Color Patterns	Pores, Roots, Rock Structure	Depth to Bedrock	Depth to Water	Comments
O/A	0"	2"	Loam	Fine sand w/ clay + trace silt Vegetation	7.5YR3/2 Dark Brown	Solid	Several pores Roots	—	—	Dry
B	2"	24"	Silty clay Loam	Silt w/ clay to minor clay trace vegetation	2.5YR5/3 Reddish Brown	Solid	Pores, few roots 1/4" to 1/2" rock fragments	—	—	Dry
C	24"	62"	Silty clay to weathered parent material	Clay w/ silt weathered Red Sandstone	10R4/4 Weak Red	Solid	Few pores > 1/2" rocks	—	—	Dry

Horizon:	USDA Definition	Soil Textural Class	Boundary	Notes:
O	Organic debris	Use ternary diagram from US Department of Agriculture Soil Conservation Service	Use depth and classification	- Did Not Encounter Seasonal High Groundwater
A	Dark colored, mixed mineral organic matter		Classification as Follows: Abrupt	
B	Maximum accumulation of silicate clay minerals		Clear	
C	Weathered parent material		Gradual	
R	Layer of consolidated rock beneath the soil		Diffuse	

INFILTRATION TEST DATA SHEETS



INFILTRATION TEST DATA SHEET

Tetra Tech, Inc.

7 POINTS LOOP EFRD

PROJECT NAME: SUNOCO LOGISTICS TEST AREA ID: IT-A - SURFACE
 PROJECT NUMBER: 112 IC 05958 - 17 PERSONNEL: K. SIMPSON, J. MARLOW

TEST METHOD: Double Ring Infiltrometer Percolation
 Single Ring Infiltrometer

Location Coordinates or Description:
40.37454
-078.07770 * NEW COORD.

INNER RING INSIDE DIAMETER/HEIGHT: 6" x 10"
 OUTER RING INSIDE DIAMETER/HEIGHT: 10" x 10"

PERCOLATION HOLE DIAMETER: NA (If performing an open hole perc test)

DATE(s): 10/4/16

Distance from the bottom of the inner ring/hole to measuring point (minimum water column of 6-8 inches): 8"

MEASURING POINT: Ring Rim Indicator Mark DEPTH OF TEST: 2" BGS

TIME	ELAPSED TIME SINCE START OF TEST (minutes)	WATER LEVEL DROP, INNER RING OR PERCOLATION HOLE (inches)	VOLUME OF WATER ADDED AT EACH CYCLE, INNER RING (liters)	REMARKS
------	--	---	--	---------

PRESOAK DATA

0800	0	-----	4.0	
0830	30	6/16	0.21	
0900	60	6/16	0.20	

TEST DATA 30 MIN TEST

0900	0 (60)	-----	—	START TEST
0930	30 (90)	5/16	0.19	
1000	60 (120)	6/16	0.21	
1030	90 (150)	5/16	0.20	
1100	120 (180)	4/16	0.16	END TEST, STABLE

PARKING LOT / ROAD

↑

SUNOCO PROPOSED ROW N

* OLD A LOCATION

BUCKEYE ROW

ENTERPRISE ROW

IT. A "NEW"

* LOCATION MOVED SSE ~65' TO CLEAR ENTERPRISE PIPELINE

NO RAIN OVER LAST 24 HRS

SEE ALSO PHOTO & SOIL LOG

